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Water use, yield and economics of fenugreek (*Trigonella foenum-graecum* L.) under varying IW-CPE ratios and fertilizer levels in South West Rajasthan

R.C. Dhaker[1], R.K. Dubey[2], R.C. Tiwari and S.K. Dubey[3]

Department of Agronomy, Rajasthan College of Agriculture,
Maharana Pratap University of Agriculture & Technology, Udaipur-313 001 Rajasthan, India.
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ABSTRACT

A field experiment was conducted at Udaipur for two consecutive *rabi* seasons of 2011-12 and 2012-13 with aim to rationalize the water use and enhance the productivity of fenugreek through use of appropriate IW-CPE ratio and fertilizer level. Results show that IW-CPE ratio of 1.0 registered significantly higher pooled seed yield (1833 kg ha^{-1}) to an extent of 45.48, 27.50 and 11.90% and pooled haulm yield (5111 kg ha^{-1}) to a level of 41.42, 23.72 and 10.26% over lower IW-CPE ratios 0.4, 0.6 and 0.8, respectively. However, pooled seed and haulm yield were statistically at par between IW-CPE ratios of 1.0 and 1.2. IW-CPE of 1.0 also recorded significantly higher pooled consumptive use (211.91 mm ha^{-1}) over lower IW-CPE ratios. Water use efficiency (WUE) under IW-CPE ratio of 1.0 (8.63 kg grain mm^{-1} ha^{-1}) was indifferent to IW-CPE ratio of 1.2 however; these treatment registered significantly lower pooled WUE values than various lower IW-CPE ratios. IW-CPE ratio of 1.0 also registered significantly higher pooled dry matter $plant^{-1}$ at 40 and 80 days (1.40 and 11.97 g, respectively) and at harvest (17.07 g) over different lower IW-CPE ratios. IW-CPE ratio of 1.0 fetched significantly higher pooled net return (Rs 58442 ha^{-1}) and benefit cost ratio (3.53) over lower IW-CPE ratios but variations were indifferent with IW-CPE ratio of 1.2. Among fertility levels, 40 kg N + 40 kg P_2O_5 ha^{-1} registered significantly higher pooled yield (seed: 1721 kg ha^{-1} and haulm: 4777 ha^{-1}), consumptive use (173.59 mm ha^{-1}), WUE (10.40 kg grain mm^{-1} ha^{-1}), dry matter $plant^{-1}$ at 40 days (1.3- g), 80 days (11.67 g) and at harvest (16.39 g), net return (Rs 54176 ha^{-1}) and benefit cost ratio (3.33) but variations were indifferent with 60 kg N + 60 kg P_2O_5 ha^{-1} in pooled seed and haulm yield, consumptive use, WUE, dry matter $plant^{-1}$ at 40 and 80 days and harvest and net return.

Key words: Benefit cost ratio, Consumptive use, Dry matter accumulation, IW-CPE ratio, Net return, Water use efficiency.